Appendix N

# Detailed Implementation Cost Estimate Assumptions

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This appendix presents detailed assumptions used to estimate the cost for implementing the LCR MSCP Conservation Plan, and is a backup for Table 7-1 and the cost explanation provided in Chapter 7 of the LCR MSCP HCP. The costs are presented in the same order as they are presented in Chapter 7. General information on each cost category is provided in Chapter 7. No additional assumptions are provided in this appendix for the existing habitat maintenance and remedial measures cost categories.

## N.1 Program Administration

Table N-1 lists the estimated cost per employee per year of different program administration staff positions.

**Table N-1.** Cost per Employee per Year for Administrative Staff

| Number | Position | Cost per Employee per Year |
|---|---|---|
| 1 | Program Manager | $159,589 |
| 2 | Group Managers | $135,050 |
| 1 | Senior Scientist | $135,050 |
| 1 | IT—Database Management | $113,566 |
| 1 | Coop/Grant Agreements | $94,756 |
| 1 | Budget Analyst | $94,756 |
| 1 | Admin—Secretary | $57,613 |
| 1 | Admin—Secretary | $51,681 |
| 1 | Clerk | $41,151 |

The costs include the yearly salary for each employee plus an additional 27 percent for the following benefits: health insurance, life insurance, retirement, and social security. An additional 21 percent is added to the yearly salary and benefits for the following regional overhead costs: support activities, human resources, local area network system, and finance. Finally, an additional 20 percent is added to the yearly salary and benefits for the following LCR MSCP overhead costs: rent, utilities, equipment, supplies,

training, vehicles, and avian field equipment. Travel costs are assumed to be $20,000 per year.

## N.2 Land Acquisition

It is assumed that private land will be purchased in years 6–15. Approximately $19,000,000 will be spent on purchasing private land. It is assumed that new tribal leases will be set up in years 6–20, and that approximately $41,100,000 will be spent on leasing tribal land through year 50. Habitat creation will be implemented on public and tribal lands with no associated land acquisition costs in years 1–5. It is assumed, however, that approximately $1,000,000 will be required during years 1–5 for planning of future acquisitions.

## N.3 Planning, Design, and Engineering

Table N-2 lists the estimated cost per employee per year of different planning, design, and engineering staff positions, including the benefit and overhead costs described in Section N.1. One-third of these staff positions would be funded for planning, engineering, and design. The remaining two-thirds would be funded for the habitat creation cost category (Section N.4).

**Table N-2.** Cost per Employee per Year for Planning, Design, and Engineering Staff

| Number | Position | Cost per Employee per Year |
|---|---|---|
| 3 | Project Manager | $113,566 |
| 1 | Project Manager | $94,756 |
| 2 | Project Manager | $78,313 |
| 1 | Technical Support | $57,613 |
| 1 | Technical Support | $51,681 |
| 1 | Technical Support | $46,192 |

Travel costs are assumed to be $25,000 per year. Travel costs are also divided between the planning, engineering, and design and habitat creation cost categories.

Technical costs for planning, engineering, and design are assumed to fall within one of three categories. Of the 30 total conservation areas that are assumed to be developed, five are assumed to be on agricultural land and would require no additional design, 10 are assumed to be on agricultural land and would require additional design, and 15 are assumed to be on undeveloped land and would require additional design. Technical costs for planning, engineering, and design are assumed to be $100,000 per conservation area for the five conservation areas that are on agricultural land and would require no additional design. Costs include soil and depth-to-groundwater analyses. Technical costs for planning, engineering, and design are assumed to be $180,000 per conservation area for the 10 conservation areas that are on agricultural land and would require additional

design. Costs include soil and depth-to-groundwater analyses ($100,000) and design contracting costs ($80,000). Technical costs for planning, engineering, and design are assumed to be $240,000 per conservation area for the 15 conservation areas that are on undeveloped land and would require additional design. Costs include soil and depth-to-groundwater analyses ($100,000), topography and surveying ($40,000), and design contracting costs ($100,000).

# N.4 Habitat Creation

It is assumed that over the 20-year period that creation is assumed to occur, total costs for creation of each land cover type will be approximately $72,500,000 for cottonwood-willow on undeveloped land, $17,500,000 for cottonwood-willow on agricultural land, $6,100,000 for honey mesquite on undeveloped land, $3,600,000 for honey mesquite on agricultural land, $11,500,000 for marsh, and $21,600,000 for backwaters. It is assumed that habitat created during years 1–5 will be established on active agricultural lands.

# N.5 Environmental Compliance

For purposes of cost estimation, habitat creation projects are divided into three size categories:

- Small project (100 acres or less); 50 percent of conservation areas are assumed to be small;
- Medium project (100–500 acres); 40 percent of conservation areas are assumed to be medium; and
- Large project (500–1,000 acres); 10 percent of conservation areas are assumed to be large.

National Environmental Policy Act (NEPA) compliance costs are assumed to be:

- Small project: $15,000;
- Medium project: $30,000; and
- Large project: $55,000.

Clean Water Act, sections 401 and 404, costs are assumed to be:

- Nationwide Permit 27, "Stream and Wetland Restoration Activities," compliance: $10,000 for each conservation area in addition to the below costs;
  - Small project: $25,000;
  - Medium project: $40,000; and
  - Large project: $65,000.

National Historic Preservation Act (NHPA) section 106 compliance costs are assumed to be:

- Small project: $13,000;
- Medium project: $35,000; and
- Large project: $55,000.

These costs reflect cultural inventory only. If significant cultural resources are found, the cost for compliance with section 106 of the NHPA would increase considerably.

Other regulatory compliance is assumed to cost $6,000 per conservation area.

# N.6 Fish Augmentation

Of the 660,000 total razorback sucker that would be reared over the 50 years of the LCR MSCP, it is assumed that 12,000 per year would be reared in years 1–5 and 11–50, and that 24,000 per year would be reared in years 6–10. Of the 620,000 total bonytail, it is assumed that 11,000 fish per year would be reared in years 1–5 and 31–50, 21,000 fish per year would be reared in years 6–10, and 12,000 fish per year would be reared in years 11–30. The average cost for rearing both razorback sucker and bonytail, which includes the costs for hatching, rearing, tagging, and releasing each fish, is assumed to be $800,000 per year in years 1–5 and 11–15, $1,200,000 per year in years 6–10, and $600,000 per year in years 16–50.

# N.7 Conservation Area Management and Maintenance

Table N-3 lists the positions that would be funded for conservation area management and maintenance.

**Table N-3.** Cost per Employee per Year of Conservation Management and Maintenance Staff

| Number | Position | Cost per Employee per Year |
|---|---|---|
| up to 2 | Site manager | $108,970 |
| up to 1 | Foreman | $90,060 |
| up to 1 | Foreman | $73,624 |
| up to 2 | Laborer | $59,433 |
| up to 2 | Laborer, half time | $29,717 |

It is assumed that one site manager would be funded in years 1–10, and two site managers would be funded in years 11–50. It is assumed that one foreman at the higher pay rate would be funded in years 1–5; one foreman at the higher pay rate and one full-

time laborer would be funded in years 6–10; one foreman at the higher pay rate, one foreman at the lower pay rate, and two full-time laborers would be funded in years 11–15; and one foreman at the higher pay rate, one foreman at the lower pay rate, two full-time laborers, and two half-time laborers would be funded in years 16–50. Travel costs are assumed to be $20,000 per year for all staff.

It is assumed that the cost of building a field facility is $250,000. Utility costs for field facilities are assumed to be $4,850 per facility per year.

The yearly lease and fuel cost for each vehicle is assumed to be $9,130. It is assumed that $50,000 worth of other equipment would be purchased for every 5,000 acres of conservation area. It is assumed that the cost to maintain this other equipment, fences, and roads would average $5 per acre per year.

Water pumping costs are based on the consumptive use of each land cover type and the area of each land cover type that would be created in each 5-year period of the LCR MSCP. For half of the water needs for created land cover types, it is assumed that water would be pumped (the other half of the needed water would come from the river or canals via gravity). It is assumed that the water would be pumped from wells, that half of the water would be pumped with electricity and half would be pumped with diesel, and that the total cost for pumping would be $2.85 per acre-foot for electric pumping and $16.79 per acre-foot for diesel pumping.

Maintenance activities include backwater dredging, cowbird control, and nesting box maintenance. It is assumed that backwater dredging would take place every 25 years, starting 25 years after the 5-year period in which backwater creation took place (this assumption does not account for the dredging required after major flood events, a cost included under the remedial measures cost category). It is assumed that 3,000 cubic yards would be dredged from each backwater acre, and that dredging costs are $7 per cubic yard. It is assumed that cowbird control and nesting box maintenance are covered under the costs for maintenance staff and maintenance equipment.

It is assumed that the major habitat maintenance that would be conducted by staff from the Yuma area office would cost an average of $130,000 per year for years 1–50.

# N.8 Law Enforcement Staff

Table N-4 lists additional law enforcement positions that would be funded.

**Table N-4.** Cost per Employee per Year of Law Enforcement and Firefighting Staff

| Number | Position | Cost per Employee per Year |
|---|---|---|
| 1 | Law enforcement officer | $90,060 |
| up to 1 | Law enforcement officer | $73,624 |
| 1 | Firefighter | $90,060 |
| up to 2 | Firefighter | $73,624 |

It is assumed that one law enforcement officer at the higher pay rate would be funded in years 1–15 and one law enforcement officer at the higher pay rate and one law enforcement officer at the lower pay rate would be funded in years 16–50. Vehicle travel costs for law enforcement officers are assumed to be $0.36 per mile for 30,000 miles per year per person, for a total of $10,800 per person per year.

## N.9 Wildland Firefighting Staff

Table N-4 lists additional firefighting positions that would be funded. One firefighter at the higher pay rate would be funded in years 1–50; one firefighter at the lower pay rate would be funded in years 11–15 and two firefighters at the lower pay rate would be funded in years 16–50. Vehicle travel costs for wildland firefighters are assumed to be $0.36 per mile for 30,000 miles per year per person, for a total of $10,800 per person per year.

## N.10 Topock Marsh Pumping

In years 1–5, $300,000 would be spent for pump purchase. It is assumed that the utility costs for pumping are $400 a day and that pumping would occur for 120 days every year.

## N.11 Monitoring, Research, and Adaptive Management

System monitoring costs for fish are assumed to decrease from an average of $600,000 per year in years 1–5 to an average of $310,000 per year in years 6–15, decrease to an average of $210,000 per year in years 16–30, and then decrease to an average of $100,000 per year in years 31–50. System monitoring costs for wildlife are assumed to increase from an average of $860,000 per year in years 1–5 to an average of $920,000 per year in years 6–15, decrease to an average of $210,000 per year in years 16–30, and then decrease to an average of $150,000 per year in years 31–50. Costs for system monitoring would include the development of a monitoring database. It is assumed that an average of $100,000 per year in years 1–10 would fund database development.

It is assumed that funding for fish species research would increase from an average of $240,000 per year in years 1–5 to an average of $380,000 per year in years 6–15, then decrease from an average of $60,000 per year in years 16–30 to an average of $30,000 per year in years 31–50. Funding for primary wildlife species is assumed to increase from an average of $820,000 per year in years 1–5 to an average of $890,000 per year in years 6–15, then decrease from an average of $210,000 per year in years 16–30 to an average of $120,000 per year in years 31–50. Funding for other wildlife and evaluation species is assumed to decrease from an average of $240,000 per year in years 1–5 to an average of $220,000 per year in years 6–15, then decrease from an average of $20,000 per year in years 16–30 to $5,000 per year in years 31–50.

Funding for research on cottonwood-willow and honey mesquite development and management would decrease from an average of $790,000 per year in years 1–15 to an average of $370,000 per year in years 16–30, and then decrease to an average of about $150,000 per year in years 31–50. Funding for marsh and backwater development and management research would increase from an average of $470,000 per year in years 1–5 to an average of $700,000 per year in years 6–15, then decrease from an average of about $350,000 per year in years 16–30 to an average of $110,000 per year in years 31–50. In years 1–15, an average of about $170,000 per year would fund research on fish rearing techniques and an average $170,000 per year would be used to conduct site evaluations to collect the information necessary to select conservation areas based on the conservation area site selection criteria.

It is assumed that funding for postdevelopment monitoring of fish habitat would increase from an average of $160,000 per year in years 1–5 to an average of $320,000 per year in years 6–30, then decrease to an average of $260,000 per year in years 31–50. Funding of postdevelopment monitoring for wildlife and wildlife habitat is assumed to increase from an average of $100,000 per year in years 1–5 to an average of $630,000 per year in years 6–15, and then increase to an average of about 735,000 per year in years 16–50. Management of the monitoring database is also included under postdevelopment monitoring. Database management is assumed to cost an average of $80,000 per year in years 1–5 and increase to an average of about $240,000 per year in years 6–50.

## N.12 Water Acquisition

For the purpose of this cost estimate, it is assumed that water rights are bought along with private land that is acquired. Costs associated with the purchase of water rights together with property are included in the "Land Acquisition" cost estimate. It is assumed that half of the lands in public ownership have associated water rights, and that water rights would need to be purchased for habitat creation on the remaining half of public lands. It is assumed that water rights would be leased together with tribal lands; costs associated with the lease of water rights together with tribal lands are included in the "Land Acquisition" cost estimate.

The estimated water use during each 5-year period is based on Reclamation's experience with irrigating riparian land cover types. It is assumed that more water would be needed during the first years of creation. When land cover types are more fully established, it is assumed that less water will be needed (e.g., more established canopies can decrease evaporation of applied water and established plants are more likely to be able to access groundwater).